NOAA
S 220

GENERAL NOTES

1. THIS DRAWING PROVIDES THE DIAGRAMS FOR THE HVAC SYSTEM AND WAS DEVELOPED UNDER TAR SSI–041(04) BASED ON A SHIPCHECK CONDUCTED AT CASCADE GENERAL, INC. IN PORTLAND, OREGON ON APRIL 26–30, 2004, FOLLOWING THE ACTIVATION AND CONVERSION OF THE NOAA SHIP FAIRWEATHER.

2. ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH ABS RULES FOR STEEL VESSELS AND 46 CFR USCG RULES.

3. ALL DUCTWORK OVER ELECTRICAL EQUIPMENT SHALL BE WATERTIGHT.

4. FANS SHALL BE FITTED WITH RESILIENT MOUNTS AND ELECTRICALLY GROUNDED TO THE SHIP'S STRUCTURE.

5. FABRICATE BENDS AND ELBOWS WITH AN INSIDE RADIUS EQUAL TO THE WIDTH OR DIAMETER. 90° ROUND ELBOWS SHALL BE MADE OF AT LEAST FIVE PARTS. DUCT JOINTS SHALL BE AIRTIGHT. REDUCTION IN DUCT SIZE SHALL BE ACCOMPLISHED BY LONG TRANSITIONS WITH MAXIMUM INCLUDED ANGLE OF 30 DEGREES.

6. FLANGES SHALL BE USED AT ALL EQUIPMENT CONNECTIONS, AT PORTABLE SECTIONS OF DUCTWORK AND AT CONNECTIONS OF NEW DUCTWORK TO EXISTING. ALL FLANGED JOINTS SHALL HAVE GASKETS.

7. HANGERS SHALL BE FITTED FOR PROPER SUPPORT OF ALL DUCTWORK, TERMINALS AND BENDS IN DUCTWORK. HANGER SPACING SHALL NOT EXCEED 8'0".

8. ALL AIRLIFTS AND LOUVERED OPENINGS TO THE WEATHER SHALL BE PROVIDED WITH CANVAS COVERS.

9. THIS DRAWING MODIFIES REFERENCE NOS. 1 AND 2.

MATERIAL SCHEDULE

SERVICE	SIZE	MIN. THICKNESS	DUCT MATERIAL	TAKEDOWN JOINTS MATERIAL
HVAC DUCTING	UNDER 6 INCHES	22 GAUGE	HOT DIPPED GALVANIZED SHEET STEEL	HOT DIPPED GALVANIZED SHEET STEEL
	6–12 INCHES	20 GAUGE		
	12–24 INCHES	18 GAUGE		
	OVER 24 INCHES	16 GAUGE		

SYMBOL LIST

- AXIAL FLOW FAN – HORIZ.
- AXIAL FLOW FAN – VERT.
- CENTRIFUGAL FLOW FAN
- PROPELLER FAN
- FILTER BANK
- PREHEATER
- REHEATER
- COOLING COIL
- UNIT HEATER
- ELECTRIC HEATER
- CONVECTION HEATER
- DIFFUSER
- MIXING BOX & ATTENUATOR
- A/C SUPPLY DUCT – COLD
- A/C SUPPLY DUCT – HOT
- A/C RETURN DUCT
- VENTILATION EXHAUST DUCT
- VENTILATION SUPPLY DUCT
- DUCT UP
- DUCT DOWN
- DUCT UP & DOWN
- DOOR LOUVER – 80 SQUARE INCHES
- DOOR UNDERCUT
- WATER TIGHT VALVE
- FIRE DAMPER
- VENTILATION SUPPLY TERMINAL
- VENTILATION EXHAUST TERMINAL
- FILTER BANK DIFFERENTIAL PRESS GAUGE
- NATURAL VENT OPENING LOUVERS OR AIRLIFT
- GOOSE NECK WITH WEATHER TIGHT COVER
- COWL VENTILATOR WITH WOOD PLUG
- MULTI LOUVER FIRE DAMPER
- SHUT OFF OR BALANCING DAMPER
- W.T.C. WATER TIGHT CLOSURE

REVISIONS

REV	SHT	ZONE	ITEM	DESCRIPTION	DATE	APPD
A	–	–	–	–	--/--/--	–

REFERENCES

NO	TITLE	DRAWING NO
1	FAIRWEATHER REACTIVATION HVAC DIAGRAM	FA–S3804–1
2	VENT & A.C. EQUIPMENT LIST	RA–S3801–4
3	FAIRWEATHER REACTIVATION HVAC CONTROL SYS. MODS.	FA–S5106–3
4	DIAGRAM, VENTILATION & AIR CONDITIONING	FA–S3801–2
5	–	–

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
OFFICE OF MARINE & AVIATION OPERATIONS

Seaworthy Systems, Inc.
P.O. BOX 965
ESSEX, CT 06426
TEL: (860) 767–9061

CONTRACT #
50ABNA000032
TAR–SSI–041(04)

DSGN	06/11/04	JEK
DWN	06/11/04	JEK
CHK	06/28/04	ERS
CHK	–/–/–	–

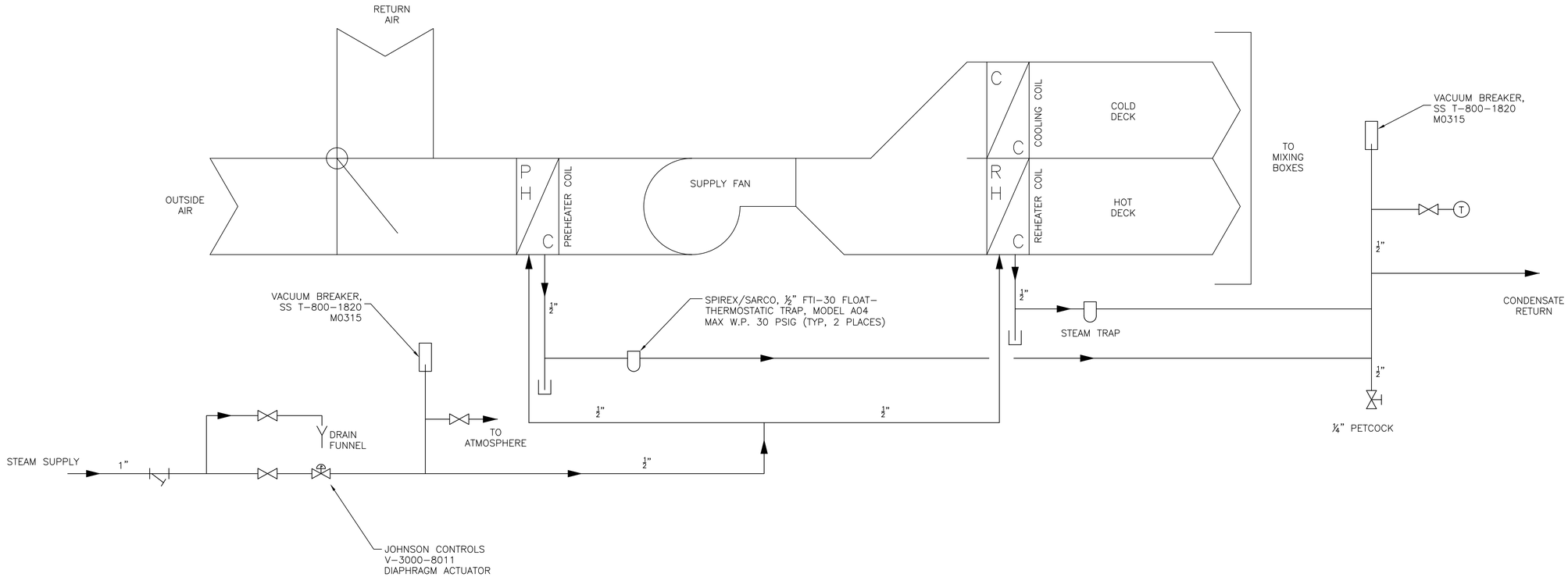
– NOAA APPRDVAL

NOAA SHIP FAIRWEATHER

HVAC SYSTEM

SIZE	CAGE CODE	NOAA DRAWING NUMBER	REV
D	0YLJ5	FA–3801–114	–

SCALE: AS SHOWN
CAD FILENAME FA–3801–114 SHT 1 OF 10



TYPICAL SUPPLY SYSTEM FAN COIL UNIT

STEAM AND CHILLED WATER SUPPLY

N.T.S.

PREPARED BY: Seaworthy Systems, Inc. ESSEX, CT 06426 TEL: (860) 767-9061	SIZE: D	CAGE CODE: 0YLJ5	NOAA DRAWING NUMBER: FA-S3801-114	REV: -
	SCALE: AS SHOWN	CAD FILENAME: FA-S3801-114	SHT 10 OF 10	

UNIT HEATERS

UNIT HTR ITEM NO.	UNIT HEATER NO.	SPACES SERVED	LOCATION			SPACE DES. TEMP.	WINTER DES. BTU/HR REQ'D	MAX BTU/HR OUTPUT PER UNIT	GPM #/HR. PER UNIT	ENT. AIR TEMP	LEAV. AIR TEMP	CFM	MOTOR		
			DECK	FR.	SIDE								HP	RPM	VOLTS
1	C-108-1	STEERING GEAR	C	108	S	50	52,096	60,500	1.78	50	129	815	1/20	1550	120
2	C-108-2	STEERING GEAR	C	108	P	50	52,096	60,500	1.78	50	129	815	1/20	1550	120
3	C-53-1	MACHINERY SPACE	C	63	S	40	158,470	125,700	3.7	40	126	1760	1/8	1100	120
4	C-68-2	MACHINERY SPACE	C	63	P	40	158,470	125,700	3.7	40	126	1760	1/8	1100	120
5	C-98-0	ENG. & DECK STORES	C	98	C	50	UNKNOWN	60,500	1.78	50	129	815	1/20	1550	120

DUCT HEATERS

HTR ITEM NO.	QTY.	TYPE OF HEATER	HEATER NUMBER	SYSTEM NUMBER	FAN ITEM NO.	CAPACITY CFM		DESIGN TEMP		WINTER DESIGN OUTPUT BTU/HR	NAVY STD NO.*	FACE SIZE		FACE AREA FT^2	STEAM FLOW LBS/HR	COND FLOW GPM
						SUMMER	WINTER	INLET	OUTLET			A	B			
2	2	PREHEATER	F-53-1	F-54-1	3	5150	5150	0	60	333,550	33-M	16.75	42	4.89	361.0	0.78
3	2	PREHEATER	F-53-2	F-55-2	4	4500	4500	0	60	291,600	33-M	16.75	42	4.89	315.6	0.68
4	1	PREHEATER	D-22-0	D-24-0	14	3770	3770	0	34.2	44,049	30-L	15.25	30	3.18	47.7	0.10
5	2	PREHEATER	D-87-2	D-87-2	5	3800	3800	0	60	246,120	32-M	18.25	30	3.80	266.4	0.57
6	1	PREHEATER	D-85-2	D-84-2	15	4260	4260	0	60	52,100	30-L	15.25	30	3.80	56.4	0.12
7	2	REHEATER	G-48-2	G-47-0	13		1175	50	150	127,120	29-M	12.25	30	3.80	111.0	0.24
						2877		93.4	110	23,370					25.3	0.05
8	2	REHEATER	D-25-2	D-24-0	14		1182	50	150	127,500	29-M	12.25	30	3.80	111.7	0.24
						2877		94.8	110	33,000					35.7	0.08
9	2	REHEATER	D-84-2	D-84-2	15		1175	50	150	104,705	29-M	12.25	30	3.80	113.3	0.24
						2877		94.8	110	42,260					45.8	0.10

* NAVY STANDARD HEATER NO. – FIN SPACING TYPE

COOLING COILS

COIL ITEM NO.	COIL NO.	A.C. SYSTEM NO.	COIL LOCATION				TOTAL COIL LOAD				COIL MODEL NO.	WATER CONN. (HAND)	TUBE DIA. O.D.	FINS PER IN.	ROWS DEEP	TUBES HIGH	COIL DIMENSION			FACE AREA SQ. FT.	AIR VEL. FT/MIN.	AIR FRIC. LOSS	G.P.M.	PRESS. LOSS FT. W.G.	CHILL WATER CONN.		SPACE SERVED
			FAN ITEM NO.	DECK	FR.	SIDE	TOTAL HEAT	TONS	SENS HEAT	SHF							HEIGHT	LENGTH	DEPTH						SUP.	RET.	
1	G-50-0	G-47-0	13	G	50	CL	210,124	16.8	134,917	57.0	10W-16-36-5608	RH	5/8	8	10	16	24	36	20½	6.00	480	.73	41.5	–	1½	1½	ACCOMMODATIONS & WORK SPACES
2	D-26-2	D-24-0	14	D	26	P	266,964	22.2	149,989	56.1	10W-18-40-6608	LH	¾	8	10	18	27¾	40	20½	7.70	402	.62	54.4	–	2	2	ACCOMMODATIONS & MEDICAL SPACES
3	D-84-2	D-84-2	15	D	86	P	316,420	26.3	177,091	56.0	10W-18-46-6608	RH	¾	8	10	18	27¾	46	20½	8.80	421	.67	64.4	–	2	2	ACCOMMODATIONS & WORK SPACES

CONVECTION HEATERS

CONV. ITEM NO.	SPACE SERVED	LOCATION			SPACE DES. TEMP.	WINTER DES. BTU/HR REQ'D	MAX BTU/HR OUTPUT PER UNIT	REQ'D GPM PER UNIT	QUAN. REQ.	SIZE
		DECK	FR.	SIDE						
1	FAN ROOM #1, G-05-001	G	48	P	40	14,974	18,200	.313	1	110
3	PILOT HOUSE, F-03-001	F	24	P/S/C	50	8,226	11,400	.172 EA	3	NAVY 11
4	WATER CLOSET, F-05-101	F	45	S	70	1,155	2,340	.04	1	15
9	PASSAGE, E-05-002	E	46	P/S	65	1,045	2,340	.04 EA	2	15
11	BATTERY LOCKER, E-06-101	E	55	S	40	8,084	10,000	.172	1	60
12	EMERGENCY GEN. RM., E-06-102	E	56	P	40	4,461	5,580	.086	1	35
13	BOAT ENGINE SHOP, E-06-103	E	69	P	60	6,833	10,000	.172	1	60
14	FAN ROOM, D-03-001	D	20	P	40	20,110	25,000	.43	1	150
21	BOSUN'S LOCKER, D-08-101	D	86	S	60	2,046	3,820	.66	1	25
22	PASSAGE, D-07-101	D	94	S	65	2,325	3,820	.66	1	25

FAN SCHEDULE

FAN ITEM NO.	TYPE OF SYS.	SYSTEM NUMBER	FAN ROOM	TYPE AND SIZE	CAPACITY FULL SPEED		FAN RPM	REQ'D SPEED REDUCTION	REMARKS
					CFM	S.P.			
1	SUPPLY	G-51-1	G-05-001	150-AF	15,000	2.00	1750/875	50%	2-SPEED FAN
2	SUPPLY	G-51-2	G-05-001	150-AF	15,000	2.00	1750/875	50%	2-SPEED FAN
3	SUPPLY	F-54-1	F-06-101	60-AF	5150	2.60	1725		
4	SUPPLY	F-55-2	F-06-102	40-AF	4500	1.65	1750	50%	2-SPEED FAN
5	SUPPLY	D-87-2	D-08-102	40-AF	3800	2.25	1750		
6	SUPPLY	B-14-1	BOW THRUSTER	10-AF	MECH. 925	1.90	3450		
7	EXHAUST	G-58-0	'G' DECK	200-AF	20,000	2.00	1740/870	50%	2-SPEED FAN
8	EXHAUST	E-38-2	'E' DECK	30-AF	3025	1.55			
9	EXHAUST	E-71-2	'E' DECK	50-AF	4950	2.03	1750	50%	2-SPEED FAN
10	EXHAUST	E-57-1	'E' DECK	20-AF	1380	1.95	3450		
11	EXHAUST	D-23-2	D-03-001	20-AF	1605	1.90	3450		
12	EXHAUST	D-95-1	'D' DECK AFT	30-AF	2850	1.70			
13	A/C	G-47-0	G-05-001	270 BL	3040	8.50	3600		
14	A/C	D-24-0	D-03-001	300 BLH	3765	10.0	3450		
15	A/C	D-84-2	D-08-102	300 BLH	4260	10.0	3550		
16	EXHAUST	D-12-2	SVY STORES D-02-001	5-CF	470	0.60	1762		
17	EXHAUST	E-38-1	E DECK	20-AF	1075	2.05	3450		
18	EXHAUST	F-32-2	RADAR RM F-04-102	12-PF	500	0.25	1750		
19	EXHAUST	E-69-2	'E' DECK FR. 68		500		1700		
20	EXHAUST	E-72-2	'E' DECK	20-AF	1650	1.89	3450		

ELECTRIC HEATERS

ALL ELECTRIC HEATERS IN WC'S AND WR'S ARE CONVECTAIR, MODEL 7358.B5 BM 00. HEATERS ARE 500W, 120V, 60 HZ UNITS.

WC/WR, E-03-001
WC/WR, E-03-104
WC/WR, E-04-101
WC/WR, E-04-102
WC/WR, E-05-101
WC/WR, E-05-102
WC/SH, D-03-102
WC/WR, D-03-105
WC/WR, D-03-106
WC/WR, D-04-108

PREPARED BY:
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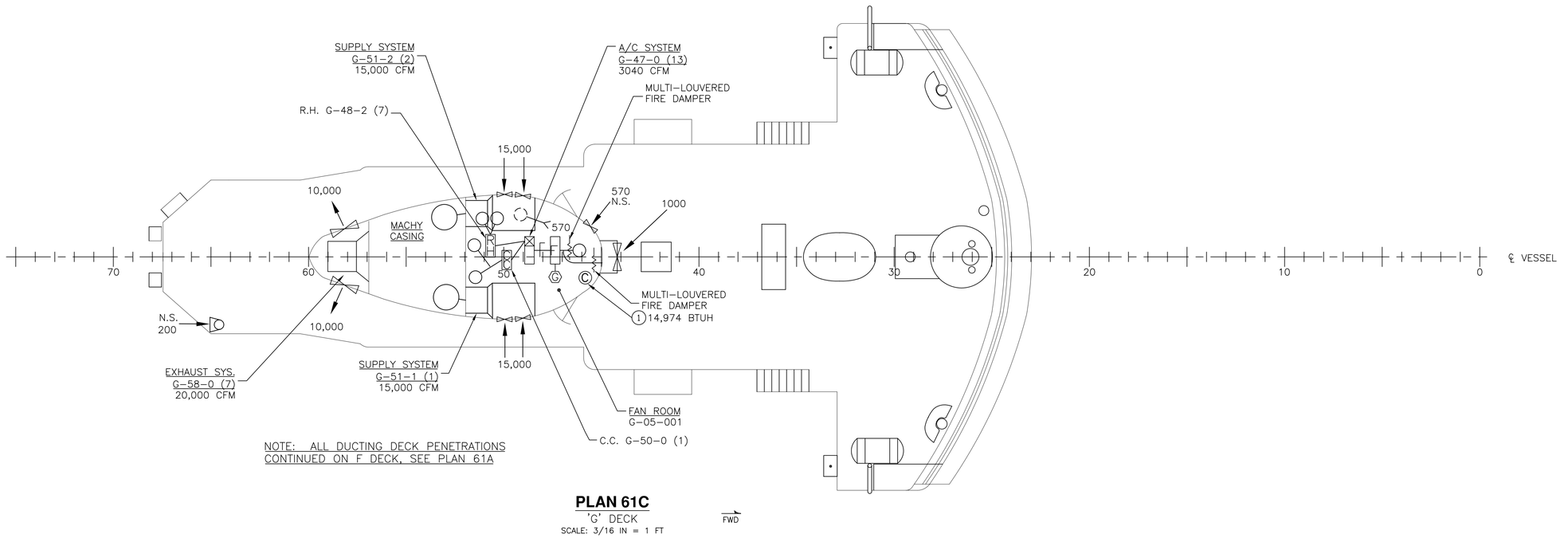
SIZE	CAGE CODE	NOAA DRAWING NUMBER	REV
D	0YLJ5	FA-S3801-114	–
SCALE: AS SHOWN		CAD FILENAME FA-S3801-114	SHT 9 OF 10

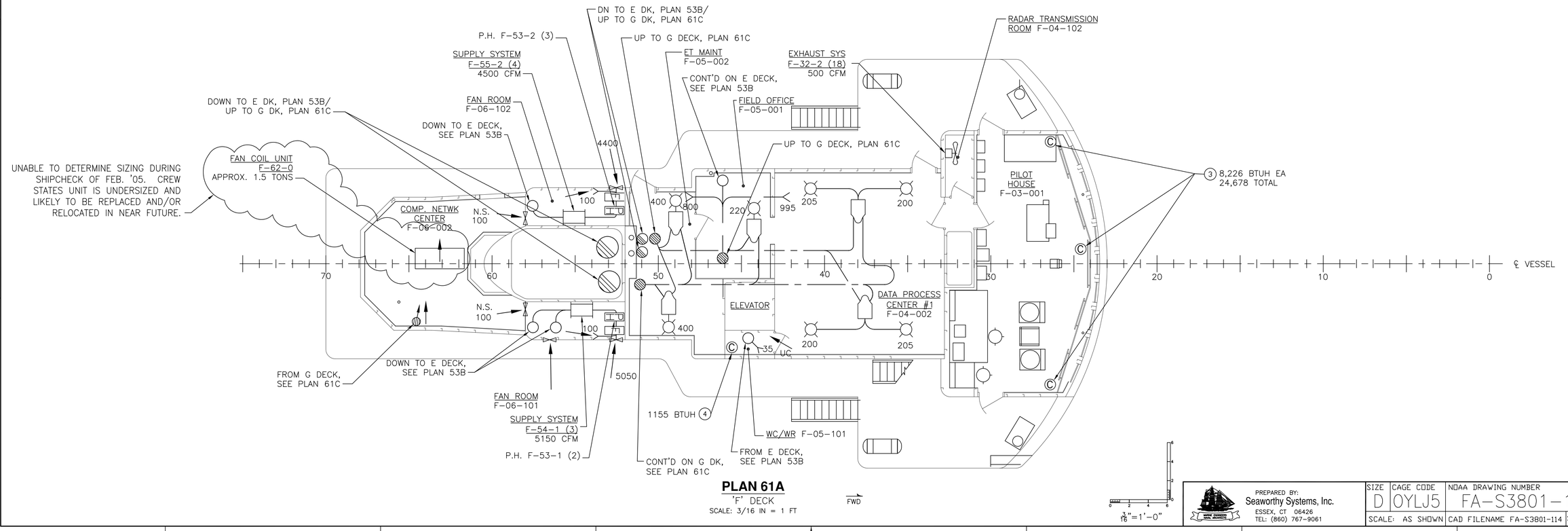


PLAN 61C

'G' DECK

SCALE: 3/16 IN = 1 FT

FWD



PLAN 61A

'F' DECK

SCALE: 3/16 IN = 1 FT

FWD

3/16"=1'-0"

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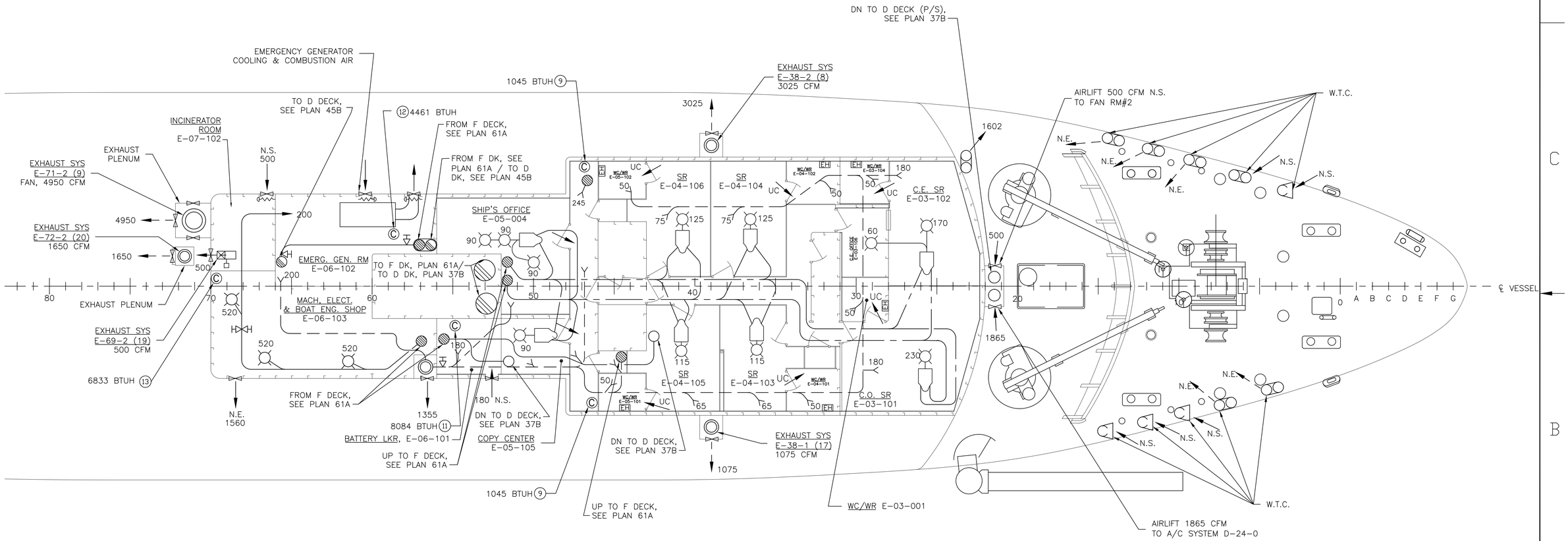
	SCALE: AS SHOWN	CAD FILENAME: FA-S3801-114	SHT 8 OF 10	



PLAN 53B

PARTIAL PLAN, 'E' DECK

SCALE: 3/16 IN = 1 FT

FWD

3/16"=1'-0"

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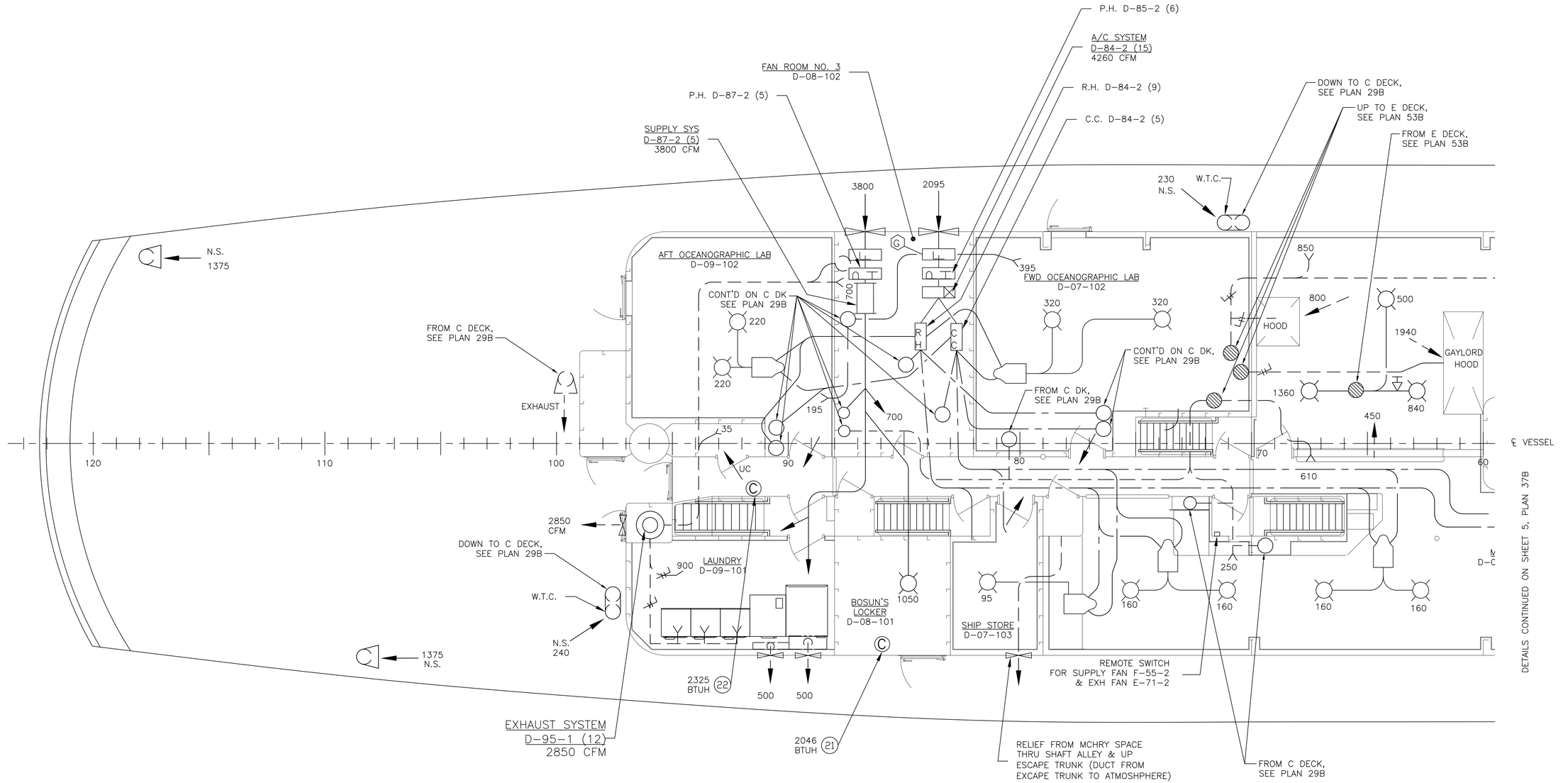
	SCALE: AS SHOWN	CAD FILENAME: FA-S3801-114		SHT 7 OF 10



PLAN 45B

PARTIAL PLAN, 'D' DECK AFT FWD

SCALE: 1/4 IN = 1 FT

1/4"=1'-0"

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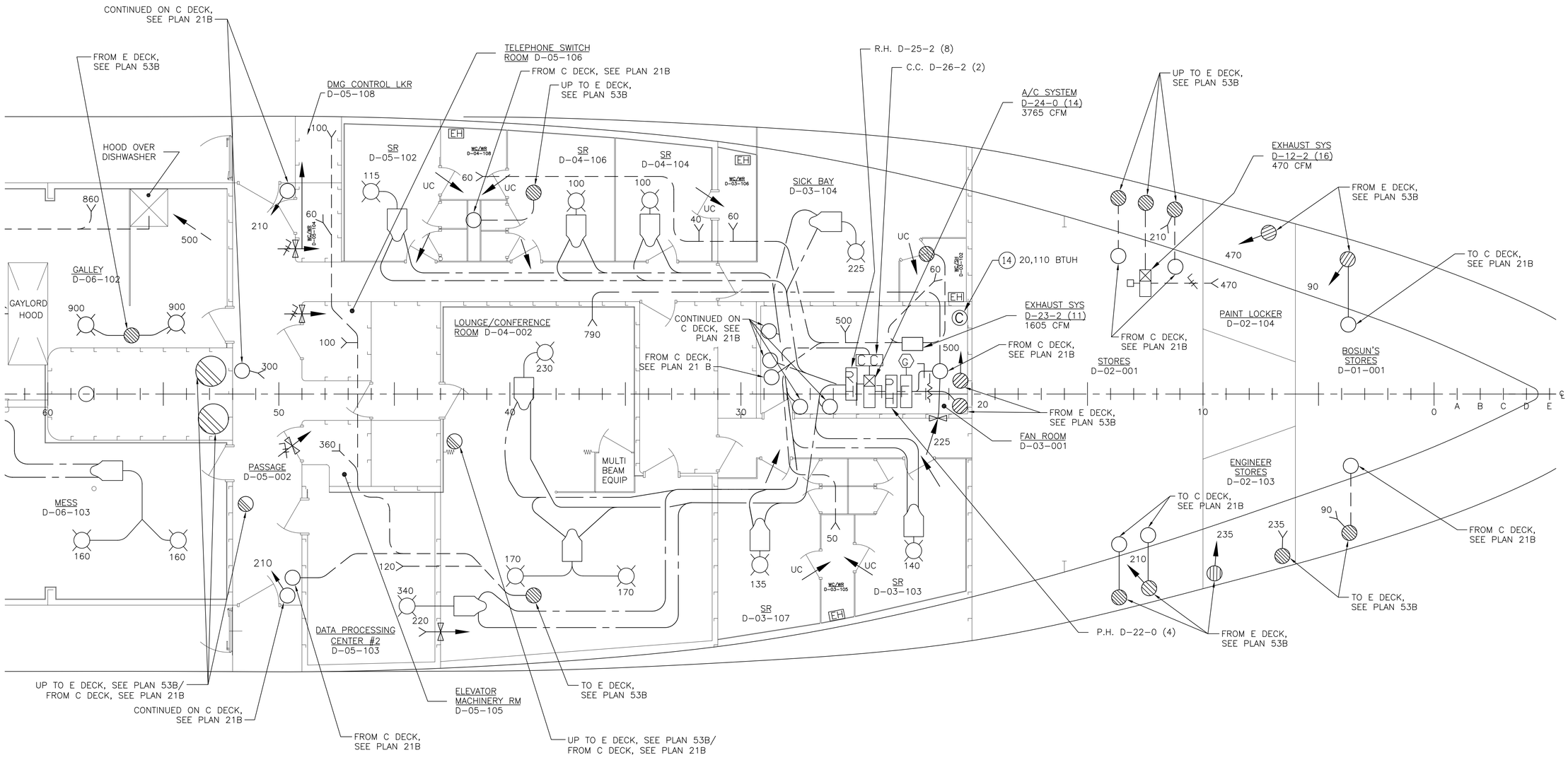
SIZE	CAGE CODE	NOAA DRAWING NUMBER	REV
D	0YLJ5	FA-S3801-114	-
SCALE: AS SHOWN		CAD FILENAME FA-S3801-114	SHT 6 OF 10


CONTINUED ON C DECK, SEE PLAN 21B
FROM E DECK, SEE PLAN 53B
DMG CONTROL LKR D-05-108
TELEPHONE SWITCH ROOM D-05-106
FROM C DECK, SEE PLAN 21B
UP TO E DECK, SEE PLAN 53B
R.H. D-25-2 (8)
C.C. D-26-2 (2)
A/C SYSTEM D-24-0 (14) 3765 CFM
UP TO E DECK, SEE PLAN 53B
EXHAUST SYS D-12-2 (16) 470 CFM
FROM E DECK, SEE PLAN 53B
TO C DECK, SEE PLAN 21B
HOOD OVER DISHWASHER
SR D-05-102
SR D-04-106
SR D-04-104
SICK BAY D-03-104
14 20,110 BTUH
EXHAUST SYS D-23-2 (11) 1605 CFM
FROM C DECK, SEE PLAN 21B
PAINT LOCKER D-02-104
STORES D-02-001
BOSUN'S STORES D-01-001
GALLEY D-06-102
GAYLORD HOOD
LOUNGE/CONFERENCE ROOM D-04-002
CONTINUED ON C DECK, SEE PLAN 21B
FROM C DECK, SEE PLAN 21 B
MULTI BEAM EQUIP
FAN ROOM D-03-001
FROM E DECK, SEE PLAN 53B
℄ VESSEL
DETAILS CONTINUED ON SHEET 6, PLAN 45B
PASSAGE D-05-002
MESS D-06-103
ENGINEER STORES D-02-103
TO C DECK, SEE PLAN 21B
FROM C DECK, SEE PLAN 21B
TO E DECK, SEE PLAN 53B
FROM E DECK, SEE PLAN 53B
SR D-03-103
SR D-03-107
P.H. D-22-0 (4)
DATA PROCESSING CENTER #2 D-05-103
ELEVATOR MACHINERY RM D-05-105
UP TO E DECK, SEE PLAN 53B/ FROM C DECK, SEE PLAN 21B
CONTINUED ON C DECK, SEE PLAN 21B
FROM C DECK, SEE PLAN 21B
UP TO E DECK, SEE PLAN 53B/ FROM C DECK, SEE PLAN 21B
TO E DECK, SEE PLAN 53B
FROM E DECK, SEE PLAN 53B
FROM C DECK, SEE PLAN 21B
TO E DECK, SEE PLAN 53B
FROM C DECK, SEE PLAN 21B
FROM E DECK, SEE PLAN 53B

PLAN 37B

PARTIAL PLAN, 'D' DECK FWD FWD

SCALE: 1/4 IN = 1 FT

¼"=1'-0"

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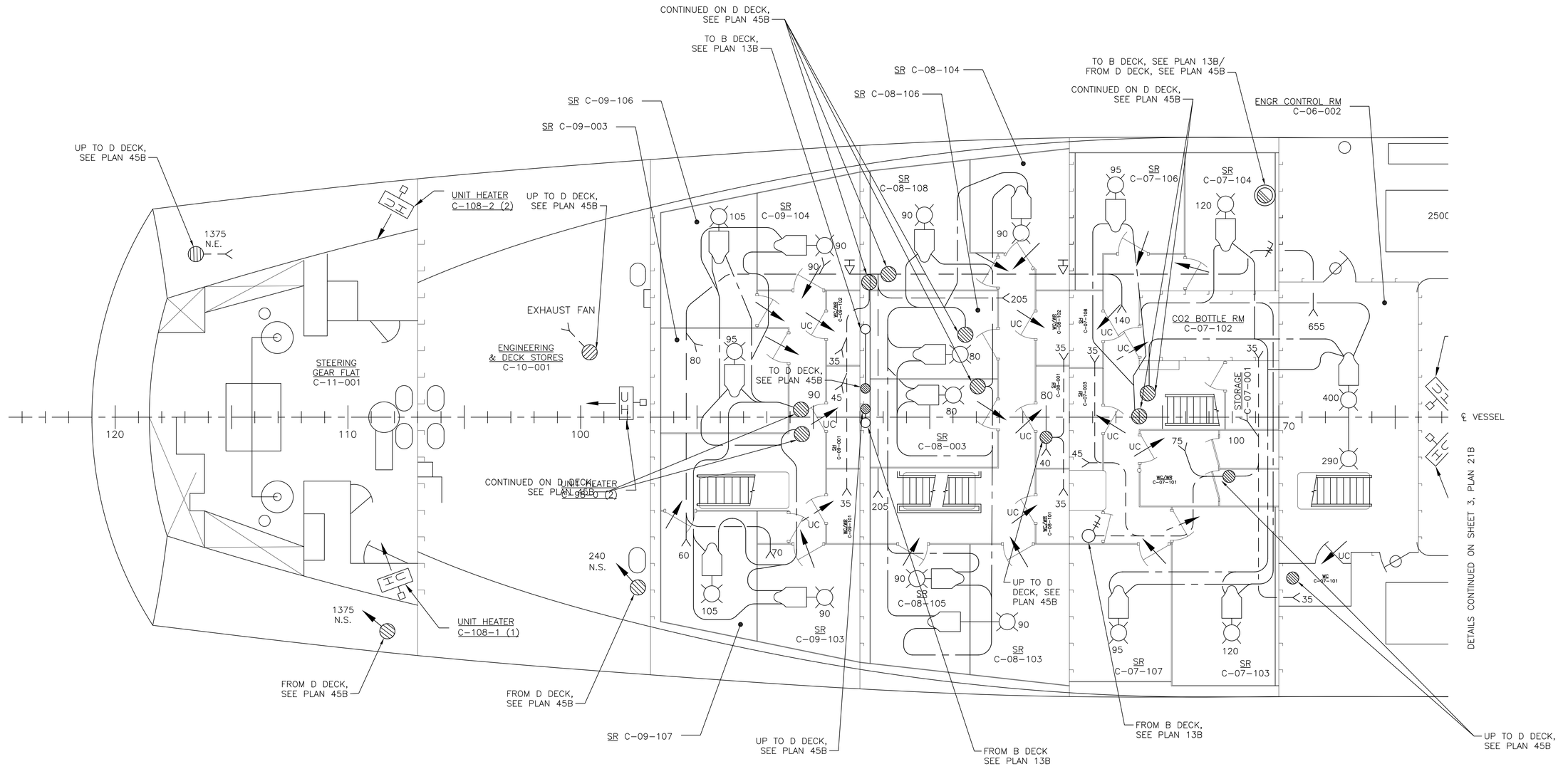
SIZE	CAGE CODE	NOAA DRAWING NUMBER	REV
D	0YLJ5	FA-S3801-114	-
SCALE: AS SHOWN		CAD FILENAME FA-S3801-114	SHT 5 OF 10



PLAN 29B

PARTIAL PLAN, 'C' DECK AFT

SCALE: 1/4 IN = 1 FT

1/4"=1'-0"

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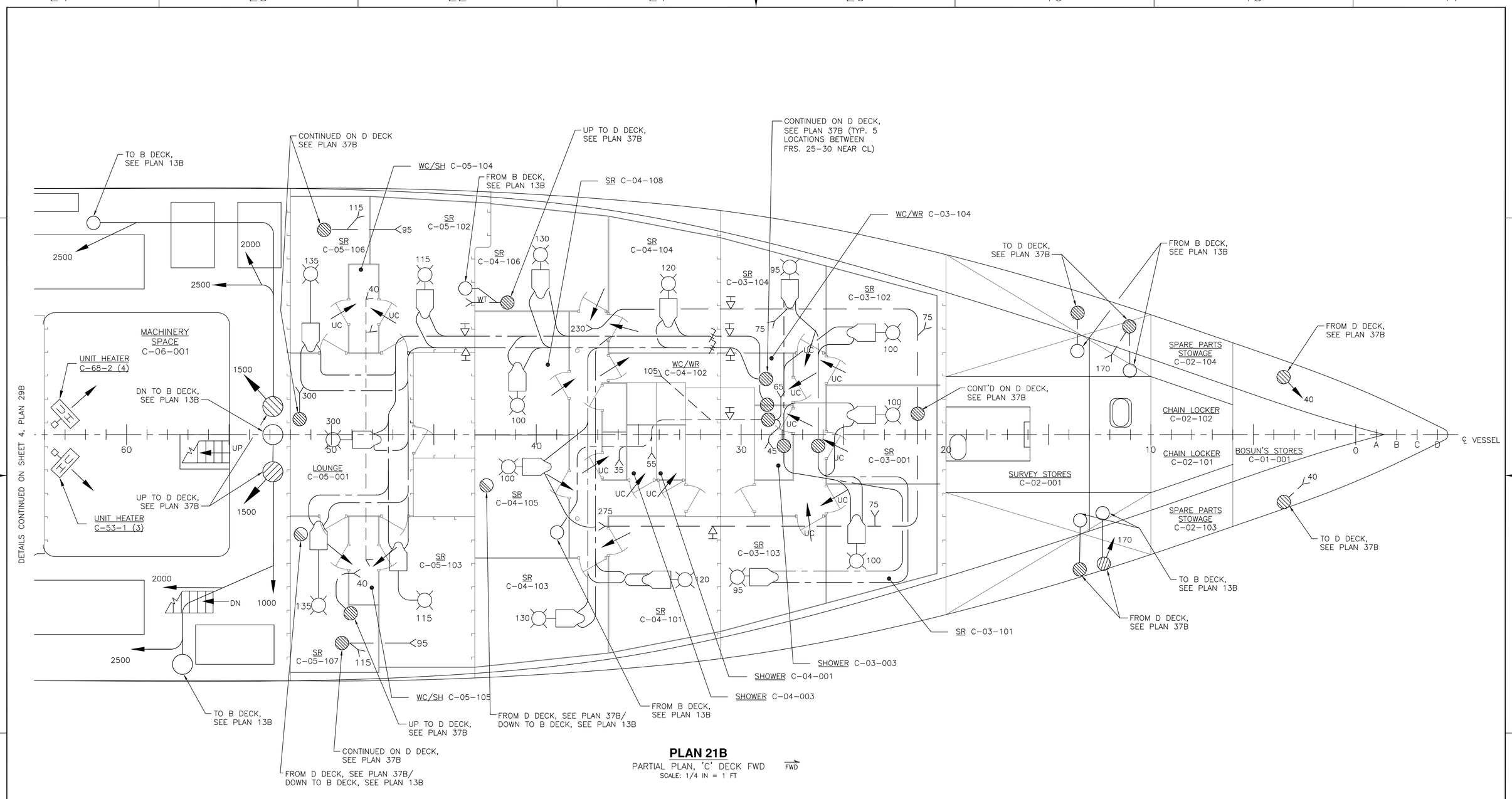
	SCALE: AS SHOWN	CAD FILENAME FA-S3801-114	SHT 4 OF 10


DETAILS CONTINUED ON SHEET 4, PLAN 29B
TO B DECK, SEE PLAN 13B
CONTINUED ON D DECK SEE PLAN 37B
WC/SH C-05-104
FROM B DECK, SEE PLAN 13B
UP TO D DECK, SEE PLAN 37B
SR C-04-108
CONTINUED ON D DECK, SEE PLAN 37B (TYP. 5 LOCATIONS BETWEEN FRS. 25-30 NEAR CL)
WC/WR C-03-104
TO D DECK, SEE PLAN 37B
FROM B DECK, SEE PLAN 13B
FROM D DECK, SEE PLAN 13B
MACHINERY SPACE C-06-001
UNIT HEATER C-68-2 (4)
DN TO B DECK, SEE PLAN 13B
UP TO D DECK, SEE PLAN 37B
UNIT HEATER C-53-1 (3)
LOUNGE C-05-001
SR C-05-106
SR C-05-102
SR C-04-106
SR C-04-104
SR C-03-104
SR C-03-102
WC/WR C-04-102
SR C-04-105
SR C-03-001
CONT'D ON D DECK, SEE PLAN 37B
SURVEY STORES C-02-001
SPARE PARTS STOWAGE C-02-104
CHAIN LOCKER C-02-102
CHAIN LOCKER C-02-101
BOSUN'S STORES C-01-001
SPARE PARTS STOWAGE C-02-103
SR C-05-103
SR C-04-103
SR C-03-103
SR C-04-101
SR C-05-107
WC/SH C-05-105
SHOWER C-03-003
SHOWER C-04-001
SHOWER C-04-003
SR C-03-101
TO B DECK, SEE PLAN 13B
UP TO D DECK, SEE PLAN 37B
FROM D DECK, SEE PLAN 37B/ DOWN TO B DECK, SEE PLAN 13B
FROM B DECK, SEE PLAN 13B
CONTINUED ON D DECK, SEE PLAN 37B
FROM D DECK, SEE PLAN 37B/ DOWN TO B DECK, SEE PLAN 13B
FROM D DECK, SEE PLAN 37B
TO D DECK, SEE PLAN 37B
TO B DECK, SEE PLAN 13B
FROM D DECK, SEE PLAN 37B
℄ VESSEL
UC
WT
UP
DN

PLAN 21B

PARTIAL PLAN, 'C' DECK FWD FWD

SCALE: 1/4 IN = 1 FT

1/4"=1'-0"

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SIZE	CAGE CODE	NOAA DRAWING NUMBER	REV
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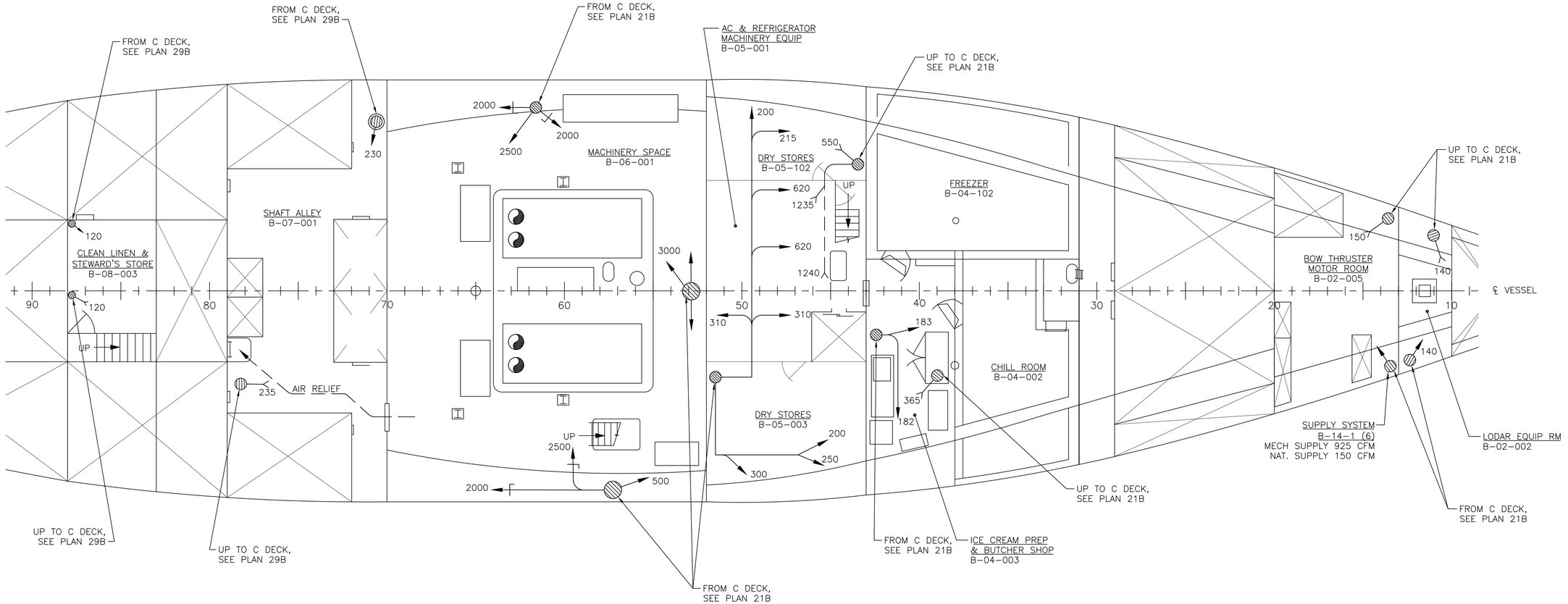
SCALE: AS SHOWN		CAD FILENAME FA-S3801-114	SHT 3 OF 10



PLAN 13B

PARTIAL PLAN, 'B' DECK

SCALE: 3/16 IN = 1 FT

FWD

3/16"=1'-0"

PREPARED BY: Seaworthy Systems, Inc. ESSEX, CT 06426 TEL: (860) 767-9061	SIZE D	CAGE CODE 0YLJ5	NOAA DRAWING NUMBER FA-S3801-114 REV –
	SCALE: AS SHOWN	CAD FILENAME FA-S3801-114	SHT 2 OF 10